

REMARKS

Claims 1-13 and 21-30 are pending in the present application. Claim 29 is amended herein.

Claim objections

The Examiner objected to Claim 29 because of an informality. Claim 29 is amended herein to correct the informality (i.e., to change "second conductive liner" to "conductive oxide").

Claim rejections

Claims 1-13 and 21-30 have been rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art, as shown in the Applicants' Figure 2, in view of Kotecki *et al.* The Applicants respectfully traverse the Examiner's rejection.

Regarding Claim 1, the references of record do not teach, anticipate or suggest the claimed invention of Applicant's independent Claim 1. For example, Claim 1 recites, "wherein the conductive layer and the first conductive liner comprise the same material." The Examiner admits that Applicants' Figure 2 does not disclose this limitation. The Examiner turns to Kotecki *et al.*, stating that it would have been an obvious modification to someone with ordinary skill in the art to modify the structure as taught by Applicant's admitted prior art and include a conductive layer and first conductive liner comprising the same material, as suggested by Kotecki *et al.*.

The Applicants respectfully traverse the Examiner's assertion. The Applicants' prior art Figure 2 illustrates a multi-layer *electrode* having four conductive layers of materials. Kotecki *et al.* teach a stacked *capacitor* having a bottom electrode and a top electrode, separated by a dielectric. Neither reference teaches or suggests a single electrode with a conductive layer and a first conductive liner of the same material. The Applicants respectfully submit that it would not be obvious to combine the two.

The capacitor taught by Kotecki *et al.* includes two conductive electrodes separated by a

dielectric material. With respect to the present rejection, Kotecki *et al.* merely teach a capacitor where both electrodes include the same material. This fact in no way teaches or suggests modifying the multi-layer electrode shown in prior art Figure 2. There is simply no motivation to combine the capacitor taught by Kotecki *et al.* with the multi-layer electrode of prior art Figure 2, as the Examiner suggests.

Furthermore, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP, § 2143.01, paragraph 8 and *In re Mills*, 916 F.2d 680, 682 (Fed. Cir. 1990). The Examiner has failed to show, and the Applicants are unaware of, any suggestion in either reference that the multi-layer electrode shown in prior art Figure 2 should be modified in a manner described with reference to Kotecki *et al.*'s stacked capacitor, in order to meet the limitations recited in Applicants' Claim 1.

Thus, it would not be obvious, and there is no motivation, to modify the structure shown in Figure 2 by the selection of the same material for a conductive layer and first conductive liner. Therefore, the Applicants assert that the Applicants' independent Claim 1 is allowable over the references of record.

Furthermore, it is respectfully submitted that Claims 2-7, 21, 23, 25 and 26, which depend from independent Claim 1, are allowable by reason of dependence from an allowable claim as well as for adding further limitations, which narrow the scope of the particular independent claim and compel a broader interpretation of the base claim upon which they depend.

Regarding Applicants' independent Claim 8, the Examiner admits that prior art Figure 2 fails to show a "first conductive liner comprising a molecular grain structure having a plurality of columns" and a "conductive layer comprising a molecular grain structure having a plurality of columns, wherein the columns of the conductive layer are not aligned with the columns of the first conductive liner," as recited in Applicants' Claim 8. The Examiner turns to Kotecki *et al.* for these limitations. However, Kotecki *et al.* do not teach, suggest or anticipate these limitations. The Examiner has failed to point out, and the Applicants are unaware of, any

portion of the Kotecki *et al.* reference that teaches these limitations. Neither reference teaches a first conductive liner comprising a molecular grain structure having a plurality of columns, a conductive layer comprising a molecular grain structure having a plurality of columns, wherein the columns of the conductive layer are not aligned with the columns of the first conductive liner, as in the Applicants' Claim 8. Therefore, combining prior art Figure 2 with Kotecki *et al.* does not produce Applicants' Claim 8. Thus, the Applicants assert that the Applicants' independent Claim 8 is allowable over the references of record.

Furthermore, it is respectfully submitted that Claims 9-13, 22, 24, and 27, which depend from independent Claim 8, are allowable by reason of dependence from an allowable claim as well as for adding further limitations, which narrow the scope of the particular independent claim and compel a broader interpretation of the base claim upon which they depend.

Independent Claim 28 specifically recites a "platinum liner comprising a molecular grain structure having a plurality of columns," a "conductive oxide having a thickness of 20-50 Angstroms" and "a platinum layer formed over the conductive oxide, the platinum layer comprising a molecular grain structure having a plurality of columns, wherein at least one column of the platinum layer is not aligned with the columns of the platinum liner." The Examiner admits that prior art Figure 2 does not disclose these limitations, and turns to Kotecki *et al.* for the deficiencies in prior art Figure 2. In particular, the Examiner states that it would have been obvious to one of ordinary skill in the art to modify prior art Figure 2 by including a first conductive liner and a conductive layer comprising Pt and having a molecular grain structure having a plurality of columns, wherein the columns of the conductive layer are not aligned with the columns of the first conductive liner, as suggested by Kotecki *et al.* The Applicants traverse the Examiner's assertions.

First, as described above, it would not be obvious, and there is no motivation, to modify the structure shown in Figure 2 by the selection of the same material, i.e., platinum, for a conductive layer and first conductive liner. Prior art Figure 2 is a multi-layer *electrode* having four conductive layers of materials, while Kotecki *et al.* teach a stacked *capacitor* having a bottom electrode and a top electrode, separated by a dielectric; thus, it would not be obvious to combine the two references. Neither reference teaches or suggests a single electrode with a platinum conductive

layer and a platinum first conductive liner.

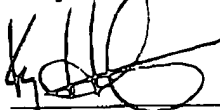
Furthermore, Kotecki *et al.* do not teach, suggest or anticipate, a "platinum liner comprising a molecular grain structure having a plurality of columns," and "platinum layer comprising a molecular grain structure having a plurality of columns, wherein at least one column of the platinum layer is not aligned with the columns of the platinum liner," as recited in Applicants' Claim 28. Not only do Kotecki *et al.* fail to mention a platinum liner and platinum layer having a plurality of columns, Kotecki *et al.* also do not teach columns of the platinum layer that are not aligned with the columns of a platinum liner. The Examiner has failed to point out, and the Applicants are unaware of, any portion of the Kotecki *et al.* reference that teaches these limitations. Thus, combining the references does not produce the Applicants' Claim 28. The Applicants therefore assert that the Applicants' independent Claim 28 is allowable over the references of record.

Furthermore, it is respectfully submitted that Claim 29, which depends from independent Claim 28, is allowable by reason of dependence from an allowable claim as well as for adding further limitations, which narrow the scope of the particular independent claim and compel a broader interpretation of the base claim upon which it depends.

Independent Claim 30 recites a "second conductive liner having a thickness of 20-50 Angstroms." The Examiner admits that prior art Figure 2 fails to teach this limitation, and states that it would be an obvious modification. The Applicants respectfully assert that a thickness of this amount would not be obvious. Prior art Figure 2 is a depiction of the teachings of Japanese patent number 10-242078, which specifically teaches an IrO₂ layer having a thickness of 36 nm or greater, equivalent to 360 Angstroms or greater (see Claim 7), which is thicker than the Applicants' Claim 30 limitations by an order of 10x. Thus, the Applicants assert that the Applicants' independent Claim 30 is allowable over the references of record.

In conclusion, the Applicants respectfully request that the Examiner enter the amendment to Claim 29, allow Claims 1-13 and 21-30, and pass the present patent application to issuance. If the Examiner should have any questions or feel that a discussion would advance the prosecution, the Applicants invite the Examiner to contact the Applicants' attorney at the telephone number listed below.

Respectfully submitted,



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FEB 03 2003

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Appendix A
Marked-up Version of Claims

29. (Amended) The multi-layer electrode according to Claim 28 wherein the conductive oxide
[second conductive liner] comprises IrO₂ or RuO₂.